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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,359	09/25/2003	Charles Zdzislaw Lobo,	614-L	7112

27201 7590 12/26/2006
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EXAMINER

TIMBLIN, ROBERT M

ART UNIT	PAPER NUMBER
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2167

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/26/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/671,359	Applicant(s) LOBOZ ET AL.	
	Examiner Robert M. Timblin	Art Unit 2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/01/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action corresponds to application 10/671,359 and applicant's remarks/amendments filed 12/1/2006. Responses to arguments begin on page 11 of this document.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/1/2006 has been entered.

Response to Amendment

Claims 1-17 have been examined and given further search and consideration. Claim 18 has been cancelled by request of Applicant.

Regarding claims 1-3, with the correction of the objected phrase "may be obtained" this objection is withdrawn.

Claim Objections

Claim 4 is objected to because of the following informalities:

The preamble states "the initial steps of." The Examiner, finds this language confusing as the initial steps (d)-(f) in claim 3 supposedly seem to be subsequent to steps (a)-(c) of claim 3. However, as claim 4 depends on claim 3, these steps as labeled are out of order (i.e. initial steps

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(d)-(f) being *initial* come after steps (a)-(c), thereby confusing the order of the steps). The Examiner respectfully asks the Applicant to clarify the order of the steps of claims 3 and 4.

Claim 4 is also objected to because the phrase “the said” is unnecessary, as either “the” or “said” should be used.

Claim 4 is further objected to because it is unclear in step (f), last line, whether “performing the method steps (a), (b), (c) of Claim 1” creates a dependency upon claim 1 or if this step is to provide a short-hand way of presenting the steps of Claim 1 in Claim 4. The Examiner kindly asks for clarification on this matter.

Claims 6-8 are objected to because the Examiner feels the labeling (a)-(c) of these claims are unnecessary as they are system claims and not method claims. Labeling (a)-(c) generally is used for denoting the steps of a method claim.

Claims 13 and 15-17 are objected to because the phrase “providing a computer program in accordance with” respective claims 9, 7, 3 and 5 are unclear. Specifically, the terms “in accordance” renders the scope of these claims as unclear as to how the method of claims 9, 7, 3, and 5 are implemented by the computer readable medium of respective claims 13 and 15-17.

Claim Rejections - 35 USC § 112

Claim 4 recites the limitation "the initial read/write ratio" in step (d). There is insufficient antecedent basis for this limitation in the claim as is not previously defined or mentioned in the claims.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 12-17 are rejected under 35 U.S.C. 101 because these claims are directed towards functional descriptive material while lacking the indication of being recorded or stored on a computer readable medium. Specifically, with regards to claims 12 and 14, a computer program is claimed as software *per se* because it is unclear to the Examiner how *arranged, when loaded* is to be interpreted as being stored on the computer system. Furthermore, loading a computer program on a computing system raises a question as to *how* it is loaded on to a computing system (i.e. is it stored on a computer readable medium that is used by the system?).

Likewise, claims 13 and 15-17 are rejected under 35 U.S.C. 101 because the language “a computer readable medium *providing*” makes it unclear as to how the computer readable medium provides the computer program (i.e. is the computer program stored on the computer readable medium?).

In summary, when functional descriptive material is recorded or stored on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory. As presently claimed, claims 12, 13, and 15 do not clearly indicate the storing or recording of a computer program on a computer readable medium and therefore are not statutory.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6-8, and 10-17, are rejected under 35 U.S.C. 102(b) as being anticipated by Krychniak (U.S. Patent 6,192,357 B1).

With respect to claim 1, Krychniak discloses a method for implementing a database, comprising the steps of:

‘providing at least one set of linked entities’ as dimensions 1-3 (fig. 1) As known in the art, dimensions represent a bounded set of entities (col. 1 lines 27-28, Krychniak). Figure 1 of Krychniak also displays how the Dimensions (1-3) are essentially linked via a fact table. Figure 1 shows “at least set of linked entities.”

‘at least one set of linked entities contains a plurality of entities (key value columns of the fact table; figure 1 and col. 1 lines 10-15) and each said entity in the said plurality of entities is arranged to store at least one data value’ (attributes and key values; fig. 1).

‘providing an additional entity in the said database for said at least one set of linked entities’ (fact table of fig. 1).

‘storing in the additional entity the aggregation of a plurality of data values contained in the said at least one set of linked entities (as the fact table stores the key values of each of the dimension tables; figure 1), whereby the aggregated data values may be obtained by performing a read

operation on the additional entity' (col. 2 lines 11-28 discloses performing a read operation on the fact table; see also figure 4 wherein in certain situations, use of a joins query is avoided).

Claim 2 as being essentially the same as claim 1 but being a method for modifying a database rather than a method for implementing a database is rejected accordingly for the same rationale as claim 1.

Similarly, claim 3 is rejected for the same rationale as claims 1 and 2 above as it is a method for reading from a database. Since claim 3 contains essentially the same limitations as claims 1 and 2 above, it is rejected for the same reasons.

Similarly, claim 6 is rejected for the same rationale as claims 1-3 above as it is a system for reading from a database. Since claim 6 contains essentially the same limitations as claims 1-3 above, it is rejected for the same reasons.

Similarly, claim 7 is rejected for the same rationale as claims 1-3 and 6 above as it is a system for implementing a database. Since claim 7 contains essentially the same limitations as claims 1-3 and 6 above, it is rejected for the same reasons.

Similarly, claim 8 is rejected for the same rationale as claims 1-3 and 6-7 above as it is a system for implementing a database. Since claim 8 contains essentially the same limitations as claims 1-3 and 6-7 above, it is rejected for the same reasons.

With respect to claim 10, Krychniak discloses 'at least one set of linked entities' (fig. 1).

With respect to claim 11, Krychniak discloses 'an aggregation of all data values stored in the at least one set of linked entities' fact table (fig.1).

With respect to claim 12, Krychniak discloses a computer program arranged, when loaded on a computing system, to implement the method' as an apparatus (claim 6).

With respect to claim 13, Krychniak discloses 'a computer readable medium providing a computer program' as an apparatus (claim 6).

With respect to claims 14-17, Krychniak teaches 'a computer readable medium providing a computer program' as an apparatus (claim 6).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krychniak as applied to claims 1-3, 6-8 and 10-17 above in view of Prabhakaran et al. ('Prabhakaran' hereinafter) (US Patent 6,859,758 B1).

With respect to claim 4, Krychniak fails to disclose determining the initial read/write ratio of the said database; comparing said initial read/write ratio of the said database; and if said initial read/write ratio is greater than said critical read/write ratio, then performing the method steps (a) (b) (c) of claim 1.

Prabhakaran, however, discloses determining the initial read/write ratio of the said database (col. 5 lines 50-55 and step 310 of figure 3);

comparing said initial read/write ratio of the said database to a critical read/write ratio (col. 6 lines 31-47 and step 330 of figure 3); and

if said initial read/write ratio is greater than said critical read/write ratio (col. 6 lines 44-47) then performing the method steps (a) (b) (c) of claim 1 as seen in the rejection of claim 1 above (which is taught by Krychniak above).

In the same field of endeavor (i.e. addressing space efficiency in data storage; col. 1, line 39 of Krychniak and col. 1 lines 26-27 of Prabhakaran), it would have been obvious to one of ordinary skill in the data processing art at the time of the present invention to combine the teachings of the cited references because Prabhakaran's teaching would have allowed Krychniak to measure the performance of a storage system (Prabhakaran, col. 2, lines 20-23). Furthermore, read and/or write commands would be provided to test the storage system (Prabhakaran, col. 2, lines 30-42) to further optimize the query generation system of Krychniak by indicating the behavior of Krychniak's system (col. 6 lines 44-47). Accordingly, Krychniak discloses a need for Prabhakaran's system when their system needs to determine how the database handles a query (behavior) and which optimizing scheme to use (col. 2 lines 23-37).

With respect to claim 5, Krychniak fails to teach the limitations (d1-d5) of this claim.

Prabhakaran, however, discloses 'providing data with regard to the time taken to perform a read operation and a write operation on a first implementation of the said database' as generating read/write commands to a database storage system (col. 2, lines 30-42 and fig. 3).

'providing data with regard to the time taken to perform a read operation and a write operation on a second implementation of the said database' as stress tests can be spawned against a plurality of databases (col. 2, lines 35-40).

'calculating a read time difference between the time taken to perform a read operation on said first implementation of said database and on said second implementation of said database' and 'calculating a write time difference between the time taken to perform a write operation on said first implementation of said database and a second implementation of said database' as testing all reads and all writes as there may be a performance difference between read and write operations (col. 5, lines 55-65). Furthermore, performance measures include a mixture of read and write operations for comparing architectures (i.e. first and second implementations) (col. 7, lines 10-18).

'calculating the ratio between the read time difference and the write time difference to determine the said initial read/write ratio for said database' as statistical information containing read and write operations completed by the database (col. 6 line 62 – col. 7, line 2). Furthermore, performance measures include a mixture of read and write operations for comparing architectures (col. 7, lines 10-18).

In the same field of endeavor (i.e. addressing space efficiency in data storage; col. 1, line 39 of Krychniak and col. 1 lines 26-27 of Prabhakaran), it would have been obvious to one of

ordinary skill in the data processing art at the time of the present invention to combine the teachings of the cited references because Prabhakaran's teaching would have allowed Krychniak to measure the performance of a storage system (Prabhakaran, col. 2, lines 20-23). Furthermore, read and/or write commands would be provided to test the storage system (Prabhakaran, col. 2, lines 30-42) to further optimize the query generation system of Krychniak by indicating the behavior of Krychniak's system (col. 6 lines 44-47). Accordingly, Krychniak discloses a need for Prabhakaran's system when their system needs to determine how the database handles a query (behavior) and which optimizing scheme to use (col. 2 lines 23-37).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Krychniak as applied to claims 1-3, 6-8, and 10-17 above, the combination of Krychniak as applied to claims 4, 5, and 9 above and further in view of Szendy et al. ('Szendy' hereafter)(U.S. Patent 6,681,309).

With respect to claim 9, this claim is rejected essentially the same as claim 5 above. Furthermore, Prabhakaran teaches establishing a critical read/write ratio (CRW) which provides the ratio of the average number of reads from the entity that are needed for each write to the entity as using an approximate read to write ratio (col. 5 lines 61-65).

Although Prabhakaran teaches a system for stress testing databases and recording performance measurements, they do not expressly disclose using those measurements to increase performance in those databases. Therefore, Krychniak and Prabhakaran combined fail to teach

utilizing said critical read/write ratio to increase performance in said database when said initial read/write ratio is greater than said critical read/write ratio.

Szendy, however, teaches utilizing said critical read/write ratio to increase performance in said database when said initial read/write ratio is greater than said critical read/write ratio as using the ratio of reads to writes to optimize the use of storage (col. 3, lines 24-30).

As Krychniak, Prabhakaran and Szendy are all in the same field of endeavor (i.e. efficiency of data storage), it would have been obvious to one of ordinary skill in the data processing art at the time of the present invention to combine the teachings of the cited references because the above teaching of Szendy would have provided to the combination of Krychniak and Prabhakaran a way to measure and optimize the spatial structure of storage (col. 2 lines 23-28, Szendy) for the benefit the optimization of the storage medium.

Response to Arguments

Applicant's arguments filed 12/1/2006 have been fully considered but they are not persuasive.

The Examiner fully submits that the Krychniak reference teaches the limitations of claims 1-3, 6-8, and 10-17 above. The specifics are presented herein below:

The applicant argues on page 11 that the Krychniak reference fails to disclose, "*whereby the aggregated data values are obtained by performing a read operation on the additional entity.*" The Examiner respectfully disagrees as Krychniak teaches the equivalent of the "additional entity" as the fact table in figure 1. Before proceeding, and in response to the argument on page 12, the Examiner would like to note at this time that the action dated **August**

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21st 2006, (emphasized because the Applicant states on page 10 “in response to the Office Action of **September** 21, 2006) did point out this feature. As this limitation reads, the aggregated data values (values in the fact table) are indeed obtained while being read from the query of lines 17-23 in column 2. Krychniak also expressly discloses this limitation when it is stated that aggregate data is extracted (i.e. obtained) from the fact tables (col. 1 lines 35-37). The fact table of Krychniak has columns that represent an element of a particular dimension table (col. 1 lines 10-15). Therefore the fact table represents the dimension tables. The fact table is the equivalent of the Applicant’s additional entity storing an aggregation of values because it stores the key values of the dimension tables.

The Applicant further argues on page 12 that the term “initial mapping” does not refer to the creation of a separate table...”

In response to applicant's argument on page 12 that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., creation of a separate table) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The term “creation” is not in the claims. Krychniak, however, teaches providing an additional entity, because the fact table is *provided* to store the key values of the dimension tables.

In summary, as all the necessary information from the dimensional tables is found in Krychniak's fact table, *performing a join would not be necessary* (col. 2 lines 11-13). An example of such a join-less query is shown in column 2, lines 17-22. The Examiner further

submits that although this may be a particular and unusual situation, Krychniak still teaches a situation where a join operation is avoided and still the data can be retrieved from the database.

The Applicant also argues on page 13 that the Krychniak reference is silent for determining read/write ratios. The Examiner agrees with the Applicant with respect to this argument, but as before in the office action of 8/21/2006, submits that the Prabhakaran reference teaches determining read/write ratios. The Examiner respectfully submits that the Prabhakaran reference (and Prabhakaran with Szendy with respect to claim 9) teaches this limitation in regards to the rejection of claims 4, 5 and 9 above. The argued lack of motivation is also addressed in the new rejection of those claims.

The Examiner respectfully submits that Prabhakaran teaches the new limitations establishing a critical read/write ratio (CRW) which provides the ratio of the average number of reads from the entity that are needed for each write to the entity as using an approximate read to write ratio (col. 5 lines 61-65).

The Examiner equates the Applicants initial read/write ratio to Prabhakaran's desired ratio assigned in the first step of method 300 (fig. 3). Being the first step in figure 3, this desired ratio is the same as the Applicant's *initial* ratio.

Furthermore, the Applicants critical read/write ratio is equated to Prabhakaran's use of an approximate ratio used in order to simulate an actual use of the database (col. 5 lines 60-65). Prabhakaran's use of the phrase "approximating" is the same as "...a critical read/write ratio which provides the ratio of the *average* number of reads from the entity that are needed for each write to the entity" (emphasis added).

Although Prabhakaran teaches a system for stress testing databases and recording performance measurements, they do not expressly disclose using those measurements to increase performance in those databases. Therefore, Krychniak and Prabhakaran combined fail to teach utilizing said critical read/write ratio to increase performance in said database when said initial read/write ratio is greater than said critical read/write ratio.

Szendy, however, teaches utilizing said critical read/write ratio to increase performance in said database when said initial read/write ratio is greater than said critical read/write ratio as using the ratio of reads to writes to optimize the use of storage (col. 3, lines 24-30).

As Krychniak, Prabhakaran and Szendy are all in the same field of endeavor (i.e. efficiency of data storage), it would have been obvious to one of ordinary skill in the data processing art at the time of the present invention to combine the teachings of the cited references because the above teaching of Szendy would have provided to the combination of Krychniak and Prabhakaran a way to measure and optimize the spatial structure of storage (col. 2 lines 23-28, Szendy) for the benefit the optimization of the storage medium.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert M. Timblin whose telephone number is 571-272-5627. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Cottingham can be reached on 571-272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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